Chlorhexidine gluconate preoperative skin preparation initiated a 100% reduction of incisional cesarean section infections while other risk factors were evaluated and corrected

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Abstract
Chlorhexidine gluconate preoperative skin preparation in aivm acesarean section patients results in 100% prevention of surgical site infections

Background
The estimated 4,448,419 births in the United States in 2005, 30.2% representing 1.3 million cesarean deliveries.1 The cesarean section is estimated to range from 8.9%3 to 11.2%.4 These infections include surgical site infections (SSIs) and endometritis; the rate of SSIs after C-section is estimated to range from 8.9%3 to 11.2%.4 They are after undergoing a vaginal delivery.2 Appropriate skin antisepsis is one of the care initiatives designed to reduce SSI.5 A reduction in SSIs is one of the goals of the 5-Million Lives campaign of 2005.6

Methods
The 2nd generation of skin antiseptics (2G) is no-rinse products containing 70% isopropyl alcohol. Chlorhexidine gluconate (CHG) is a second generation of 2G skin antiseptics. CHG is a bactericidal agent effective on a broad range of antimicrobial activity and is not flammable.7 CHG is a bactericidal agent effective on a broad range of antimicrobial activity and is not flammable.7

Before implementation of procedural changes, a retrospective review of procedures performed before and after implementation was conducted. Between June of 2006 and August 2006, UMMC noted that ourSSI rates after C-section were greater than the benchmarks set by the National Nosocomial Infections Surveillance System (NNIS). Therefore, UMMC initiated a team approach to identify and address the problems that might contribute to the high rate of SSIs. Due to the benefits associated with the use of CHG-containing skin preparations, UMMC explored the use of such products as part of the initiative to reduce SSIs in C-section patients.

Objective
The UMMC infection control team first identified problems that might contribute to SSIs and then developed a core team of administrators, staff nurses, physicians, and infection control personnel to address these problems. The team collaborated periodically to discuss methodology and outcomes. The first action and the action with the greatest positive impact was the development of a preoperative skin preparation protocol that involved the use of CHG containing no-rinse products, the UMMC SSI rates in C-section patients.

Results
These interventions led to a reduction in the SSI rates of 50% after C-section, when the use of the 2% CHG containing no-rinse cloth was initiated. The incisional SSI rate decreased to 0% (0 for a full year (September 2006 to September 2007). The rates dropped to zero immediately in response to initiation of the CHG-containing no-rinse cloth; allowing the team the necessary time to complete the action plan while continuing to deliver safe and effective care. For the reminder of 2007, there was 1% incisional SSI in October, 1 in November, and none in December.

Lessons Learned
Reduction of SSI rates was accomplished through the collaboration of staff and physicians and the implementation of procedural changes.

1. Standardization of preoperative skin preparation techniques to include the use of CHG-containing products contributed to a reduction in SSIs.

2. Education of the surgical scrub technicians and scrub nurses about operating room asepsis, accomplished through the use of videos and hands-on training, contributed to a reduction in SSIs.

3. Confirmation of an action plan to maintain the reduction in SSI rates was a necessary part of the process.

Conclusions
Implementation of interventions led to a reduction in SSI rates in patients undergoing C-section. Of note, the incisional SSI rate decreased to 0% soon after the 2% CHG-containing no-rinse cloth for skin preparation was initiated in August 2006. UMMC also experienced a rapid reduction in rates of endometritis after August 2006. On the basis of the 36 SSIs that occurred at our institution from January to August 2006, the interventions may have prevented an estimated average of 4.5 infections per month. An additional savings of $14,500 in anticipated incremental costs was projected for 2007 following the return to infection levels below historical and NNIS rates.

References